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eREADINESS MARYLAND: ASSESSING OUR DIGITAL OPPORTUNITIES

EXECUTIVE OVERVIEW

I. Introduction and Background

eReadiness Maryland is the State's first-ever, comprehensive study to assess Internet usage, access and infrastructure among Maryland's businesses and households. The study's goal is to provide a detailed benchmark of the ability of Maryland's businesses and households to participate in the information technology economy of the 21st century. The study began in December 2000 and took 24 months to complete.

Phase I of the study included telephone survey results of 1,422 households and 1,126 businesses, real-time dial-up connection speeds from 24 locations, and previously unavailable maps depicting fiber optic infrastructure, DSL and cable modem service availability in the State. In addition, a series of specialized studies and reports were prepared that focused on specific issues and national comparisons.

Phase II of the study included a series of regional and state-level meetings to review the findings of the study, and to identify regional needs and develop strategies to address those needs in various communities. A number of communities have already undertaken additional studies and projects to further regional goals.

This report presents the results of both phases of the study and includes a series of recommendations to improve access to high-speed communications and data transmission services.

The study was funded by federal, state, and private sources. The Maryland Technology Development Corporation (TEDCO) initiated the study and committed $100,000. The U.S. Department of Commerce's Economic Development Administration (EDA) awarded $100,000 in December 2000, to focus on the needs of distressed communities in Maryland, and the State's Information Technology Investment Fund (ITIF) provided an additional $45,000 in June 2001 to expand the study statewide.

Eleven private sector corporations contributed $10,000 each, and were critical to the success of the project. These sponsors were:

- Allegheny Ventures
- Comcast
- Dimension Data
- FIBERPlus Inc.
- IBM Corporation
- Maryland Information Technology Center
- Metromedia Fiber Network

- Miles & Stockbridge P.C.
- Northrop Grumman Information Technology
- USinternetworking, Inc.
- Verizon

The project was managed by TEDCO and overseen by a State-wide Corporate Steering Committee, composed of representatives of each of the private sponsors. Chair of the Committee was Andre Lynch, President and CEO of Ingenium Corporation, and member of the TEDCO Board of Directors, who was energetically involved in this project. Dr. Catherine Gira, President, Frostburg State University served as one co-chair, and the State's Chief Information Officers - Allison Moore and Linda Burek - successively served as the other co-chair. Lt. Governor Kathleen Kennedy Townsend served as Honorary Chair of the Steering Committee.

Technical direction was provided by a 16-member Statewide Management Committee composed of representatives of the private sector sponsors and representatives of the Department of Management and Budget, the Department of Business and Economic Development, the University System of Maryland, the University of Maryland's Technology Extension Service, SAILOR, and the Cable Telecommunications Association.

Regional Committees with 33 individuals representing the study's five regions assisted in the implementation of the study and analysis of the data: Western (Allegany, Garrett and Washington Counties) Northern (Baltimore, Carroll, Frederick, Harford Counties and Baltimore City), Central (Anne Arundel, Howard, Montgomery and Prince George's County), Southern (Calvert, Charles and St. Mary's Counties) and Eastern (Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico and Worcester Counties).

The formal kick-off meeting of the project occurred on May 31, 2001, at the headquarters of USinternetworking in Annapolis; the results of Phase I of the project were presented at a press conference on April 18, 2002 at the State Capitol. Phase II (public forums with regional analysis) of the project took place from April 19 through the fall of 2002. A total of 23 meetings were convened, involving over 1000 participants.

II. Phase I – The Process

The technical support for this project came from the Ohio Supercomputer Center, which under the direction of Pari Sabety of the Technology Policy Group, had just completed eCom-Ohio. Their project was the first statewide project in the U.S. to assess telecom infrastructure and access to information technologies, as well as levels of usage amongst Ohio businesses, government, and citizens. The 'toolset' that eCom-Ohio, and subsequently TEDCO, used to assess their state's eReadiness was developed by a consortium of the world's leading technology companies called the Computer Systems Policy Project, including IBM, Hewlett-Packard, NCR, and Intel (www.cspp.org).

TEDCO contracted with the Ohio group to perform the technical assessment and analysis of this study.

Collection and Dissemination of Data:

The first phase of *eReadiness Maryland* included over ten meetings with one or more of the Committees that TEDCO organized to represent local government, business and citizen interests. Topics covered in these meetings included how to administer the surveys, who to contact in order to properly assess infrastructure and dissemination of data as it was collected. To assist in the full disclosure of information gathered, a proprietary website was developed by Richard Rose, Director of University of Maryland Academic Telecommunications System (UMATS), and an active member of the Statewide Management Committee. The website allowed all committee members to access information as it was collected.

Household Survey:

RESI Research and Consulting, an independent research institute at Towson University, conducted confidential telephone interviews statewide with 1,422 heads of households in September, October and November of 2001, asking 40 questions about the use of computers and the Internet in their homes. The data is statistically significant for the entire State and for each region. (See tab #6 for a complete report and analysis of the household data.)

Business Survey:

The University of Maryland, College Park Survey Research Center conducted a total of 1,126 confidential telephone interviews with businesses statewide from October 2001 to January 2002. The survey consisted of over 30 questions with substantial depth on many of the questions. Issues addressed included network connectivity, eCommerce applications, and the value of information technology to the organization. Of the respondents contacted, 70% agreed to be interviewed, an extraordinarily high number, suggesting the interest of businesses in this issue. A letter from the former Lt. Governor was sent to businesses and was helpful in ensuring high response rates and giving validation to the study.

Infrastructure Mapping and Network Performance:

TPG developed four maps for the eReadiness study. (See attached maps.)

The first two maps examined the State's network backbone, which provides connectivity to the global Internet commodity. Using publicly available data from over 40 industry sources the Technology Policy Group prepared a map of the lit fiber optic infrastructure in the mid-Atlantic region. Key findings include:

- There is a huge concentration of network connectivity in the Washington D.C. area

- Baltimore's level of connectivity is competitive with cities of similar size

- Through Washington and Baltimore there is excellent nationwide connectivity with direct links to every part of the country, and direct international connectivity to Britain, Germany, and Canada

- There are major hubs in Hagerstown, Silver Spring, Largo, and Columbia, and one hub in Salisbury

The third and fourth maps displayed are for Cable Modem and DSL availability in the State. While large businesses may need T-1 lines and have large requirements for broadband usage, most small businesses do not need, and cannot afford this level of connectivity. Cable Modem and DSL are the two most common solutions for this group of businesses. Key findings include:

- Broadband Internet service is available through DSL and cable modem, but only for selected parts of the State

- The map of current DSL service – with data derived by the Technology Policy Group from provider information – shows that current DSL service is available only in parts of northern, central and southern Maryland. There is no county in the State in which DSL is fully available, and such service is scarcely available on the Eastern Shore and not available in Western Maryland outside of Hagerstown.

- Cable modem service is more widely available across the State, particularly in northern, central, and southern Maryland, but less available in parts of Western Maryland and the Eastern Shore. Information was gathered directly from providers through the Cable Telecommunications Association of MD, DE and DC and supplemented with data from providers that are not members of the Association.

- In addition to these maps, an attempt was made to map wireless, but the data was insufficient to provide a statewide map. Wireless technologies continue to make great improvements and this medium of communication transport will become more and more ubiquitous as an option. Satellite, by its very nature, is ubiquitous, but remains costly in implementation.

Dial-up Network Performance of POTS (Plain Old Telephone Service):

The final component of TEDCO's infrastructure assessment was a statewide two-week, 24 hour per day testing of 24 sites to examine performance via local and national ISPs. Forty percent of businesses and over 80% of households access the Internet in the State

of Maryland via telephone modem. (See attached chart displaying average dial-up connection speed at all 24 sites tested.)

The key finding was that the speed of dial-up access and its reliability varies considerably across the State and even within regions. For example in northern Maryland averages ranged from a high of 52 kilobytes per second (kbps) in Northeast Baltimore City to 25 kbps in the City's Canton area, and 23 kbps in Aberdeen (Harford County). Dial-up speed is not related to the ISP Company used; it is related to the performance of the copper telephone wires in service. Please note that this is not a scientific test, but provides a snapshot of the only universal communication service in the State of Maryland.

Phase I Report Presentation:

On April 18, *eReadiness Maryland* held a press conference and announced the findings from its Phase I data collection. Over 30 stories were generated statewide via print, radio and TV from this press conference. (Please see tab #2 for a complete review of the TEDCO documents distributed that day and tab #7 for all related media coverage.)

April 18 also served as a springboard for Phase II of the project, which was to publicly review the data with everyone that was interested in hearing about the study. From April 19 until September 23, 2002, 23 meetings were convened from Salisbury to La Plata to North East to Frostburg with over 1,000 total attendees representing businesses, government, education, and private citizen interests. In addition, a 100 slide PowerPoint presentation titled Statewide Overview has been downloaded from TEDCO's website over 12,500 times since April 18, 2002.

III. Phase II – Regional Meetings

TEDCO began *eReadiness Maryland* with the understanding that this assessment would encompass the entire State, but within the State, real and perceived regional delineations exist. Therefore, the State was divided into five regions: Western, Central, Northern (including Baltimore City), Eastern, and Southern. Multiple forums were held in each region with the goal of identifying specific local/regional concerns that may not have been obvious from the data. Phase II also sought to find common themes that would influence the recommendations found within this executive summary. Each public forum was sponsored by local economic development organizations, such as the Cecil County Chamber of Commerce, Lower Shore Regional Council and/or educational institutions such as Frostburg State University.

Common themes from Phase II included:

A major theme to emerge in all rural regions was the understanding that identifying sufficient "user demand" through a technique called "demand aggregation" may be necessary to incentivize providers to make capital investments that will allow greater access to broadband communications for business users, and subsequently spur economic development.

Most regions are primarily concerned with the needs of business users, while others are also looking at boosting household usage. However, all rural regions repeatedly questioned why networkMaryland was not solving their access concerns and the strong role they assumed that public sector capacity could play in meeting unmet need.

A second recurring issue is the importance of educating businesses and households on the value of the Internet and other information technology tools for increasing business productivity and expanding market opportunities beyond their geographic region. The challenge is how to utilize these resources efficiently, publicizing what types of services are actually available in their region, and how to effectively help businesses improve their digital literacy. This point lends itself to small businesses especially, which may not have the staff in-house to focus on eReadiness. The I-95 corridor (primarily the Northern and Central regions) was not concerned about access to broadband in general terms, however, the diversity of business users and variety of services makes this issue very complex in the more populated regions of the State.

Finally, there is not a one size fits all solution to the challenges of improving communications infrastructure and using information technology tools effectively. The most important finding of the study was that it is not really about technology at all, but about business requirements. Most businesses and citizens know that they want and need, fast and reliable communications access that allows them to be more productive, competitive and informed in today's global marketplace regardless of mode of access.

Regional Themes and Next Steps:

Western Maryland (Counties of Garrett, Allegany, and Washington)

A traditional economy based upon manufacturing and mining has seen an erosion of its tax base. At the same time, the region has also been one of the most innovative in the State, though, with the Garrett Regional Information Cooperative (GRIC) and Allconet (Allegany County) providing communication services that were previously unavailable. Regional leaders understand the need to improve the general infrastructure and business usage of technology (among the lowest in the State according to eReadiness) but have found it very difficult to attract the necessary capital investments that would improve services and potentially attract new businesses to the region.

In cooperation with the Tri-County Council for Western Maryland, TEDCO has already initiated a follow-up project to quantify current and future demand and identify specific investment requirements to make the region's information infrastructure more accessible and robust. An actual census of the 1,865 organizations employing ten or more employees in the region will be conducted in an attempt to aggregate demand. Results should be available in May 2003. In addition, TEDCO is supporting a $1.4 million USDA grant application that Garrett County submitted to improve their ability to offer current and new businesses (and households) high-speed communications services.

Southern Maryland (Counties of Charles, St. Mary's and Calvert)

The region's business usage was surprisingly weak given the relative wealth and good household usage numbers that were seen in the area. Developing new business opportunities in the region to diversify the local economy, and a robust information infrastructure is seen as critical to the region's evolution from primarily an agriculture-based economy to a high tech one. This region has unique challenges in its effort to aggregate demand because of the large percentage of residents that work in a few concentrated locations (Lexington Park/Pax River, Indian Head, Calvert Cliffs) and the large number of commuters that work in Washington, DC. Key issues facing the region are growth and transportation. One possible solution to this is increasing the number of telecommuters, which will place strong demands on the communications infrastructure. Under the leadership of the Tri-County Council for Southern Maryland, the region has organized a formal structure to take eReadiness and build upon this source of data. The ongoing project is titled, eOwnership.

Eastern Maryland (Counties of Worcester, Somerset, Wicomico, Dorchester, Talbot, Caroline, Queen Anne's, Kent, and Cecil)

Similar to Southern Maryland, the region's economy has been focused on agriculture and some clusters of manufacturing. The region has many, and sometimes disparate, views on how to improve access and usage. In the Eastern region, which along with Western Maryland had some of the lowest business usage numbers in the State, participants had a recurring concern that the Shore was a forgotten player in the State's deployment of communications. As in Western Maryland, under the direction of its newly formed Mid-Shore Regional Council and Tri-County Council for the Lower Eastern Shore, the Shore is preparing to begin a comprehensive follow-on project that will quantify current and future demand and identify specific investment requirements that will make the region's information infrastructure more accessible and robust. TEDCO is supporting this project and will continue to be directly engaged in all planning activities.

Northern Maryland (Counties of Frederick, Carroll, Baltimore, Harford and Baltimore City)

Given the regions' distinct areas that could be classified urban, suburban, or rural there was a great breadth of concerns and perspectives that emerged. In the rural meetings, the concerns were similar to those voiced in other similar areas of the State, such as improving access and attracting new business development. In the urban areas, the concerns mirrored those of the Central region of the State and focused on building on a strong economic base that expands the number of communications choices to its consumers.

Central Maryland (Counties of Montgomery, Prince George's, Anne Arundel, and Howard)

Heavily populated and relatively wealthy, this region has embraced the digital economy and remains the State's leader. Overall, access is good. The main concerns were redundant services and the need for policymakers to appreciate that different sized businesses have particular needs vis-à-vis the issue of technology. However, concerns were voiced about the perception that Maryland is not business-friendly and is losing technology opportunities to other states.

IV. Additional Studies

TEDCO and its stakeholders appreciate the complex, and sometimes contradictory, nature of challenges inherent in eReadiness. In order to provide as much depth as possible to this report, we have included three ancillary documents.

At TEDCO's request the Technology Policy Group prepared a national briefing to better understand how other states in the U.S. are addressing their eGovernment challenges and the impact that a deregulated communications marketplace is having on both the supply and the demand of broadband services to the private sector. (55 pages)

The TPG report covers network infrastructure and a broad overview of existing technologies; strategies for boosting demand for communication services that are currently in practice; State's Best Practices; Local and Municipal experiments with developing their own networks; Legal and Policy issues that effect eCommerce; State's approach to Information Technology; and how Maryland compares in a number of national rankings.

It is a valuable resource that complements the work of eReadiness and provides numerous insights into where the State of Maryland stands vis-à-vis other leaders in the technology economy. (See tab #3 for the full report.)

One of the key issues that all infrastructure projects face is Rights-of-Way (RoW) access. It is fundamental to developing a deployment strategy at the local, regional, or state level. Miles & Stockbridge, P.C. (M&S) was an *eReadiness Maryland* sponsor and pro-active member of the project's Statewide Steering Committee. M&S agreed to provide a general overview of public RoW in the State and to give examples of how nine of Maryland's 23 counties approach this issue. The document herein is meant only as a general overview on the subject and should not be considered legal advice in any way. (See tab #4 for the full overview.)

The Tech Council of Maryland works closely with TEDCO on a number of projects. TCM hosted one of TEDCO's regional forums in Montgomery County. *eReadiness Maryland* provided some background for the attached statement paper that the Tech Council's Broadband subcommittee has been working on for the last two years. (See tab #5 for the full report.)

V. Findings

1. There is an extremely high interest across the State in access to high-speed bandwidth from local government, educational, and non-profit organizations, businesses and citizens.

High-speed bandwidth is an extremely salient issue to all sectors of the community, even those in areas which are considered "well-served" by broadband, as evidenced by the 70% response rate to the business survey. The generous contributions of the 11 private sector sponsors, and their active participation in the governance of the project indicates the importance of this issue to a broad range of large and medium sized companies, and the impact of telecommunications in all industries.

The widespread and active participation of the regional committees and the numerous and well-attended briefing sessions (1,000 people participated at 23 meetings) attested to the intense interest at the local level. Press coverage reflects the public's interest – from April to December 2002, 82 articles recognizing the project appeared in 45 different print media, television and radio releases. (See tab #7 for a full review of all media articles.)

Private sector associations have voiced interest in the status of the State's efforts. The Technology Council of Maryland (TCM) represents biotech and infotech companies in the suburban Maryland counties; after a two-year inquiry, its Broadband Committee concluded "that the State has yet to develop a vision and strategy for upgrading and executing a statewide broadband infrastructure that would enhance business development, technology transfer and the commercialization of science" and recommended that "the state and localities must work together on a rational strategy" and "examine and restructure regulations, permitting, taxes, use fees, etc., to be consistent with the strategy."

The General Assembly has echoed these concerns: conducting hearings on the progress of networkMaryland and introducing legislation calling for studies, implementation of specific local projects, and restructuring of the State's information technology administrative organization.

2. Maryland was an early national leader in Internet usage for eGovernment, but recently other States, such as Michigan, North Carolina and Virginia have taken the lead as national models for innovative policies.

The household and business surveys commissioned by TEDCO found that in 2001, 64% of Maryland's households had personal computers vs. 57% nationally, and that 54% of the Maryland households used the Internet vs. 51% nationally. Seventy-six percent of Maryland's businesses used computer networks vs. 62% nationally; 44% maintained websites vs. 33% nationally, and 89% used the Internet vs. 70% nationally. In terms of modes of access, 32% of Maryland's businesses surveyed used T1 or better vs. 19% nationally, although only 11% used DSL vs. 17% nationally.

In 2000, the Maryland General Assembly enacted the "Digital Dozen," a package of bills that put the State at the forefront of eCommerce and eGovernment, including the recognition of digital signatures, the creation of a high-level private sector advisory group on web-based applications, and the establishment of a technology court through administrative action.

In 2001, the Center for Digital Government compared States on six categories of government use of e-commerce enabled operations, and ranked Maryland 4th ; however, in 2002, the State had slipped to 10th overall, and in important categories such as electronic commerce/business, management/administration and law enforcement and the courts its drop in rankings was even more precipitous.

The Progressive Policy Institute's State New Economy Index 2002 ranking of States showed a rise in Maryland's overall capacity to participate in the new economy, from 11th in 1999 to 5th in 2002, but a slippage in its "digital economy" score from 6th to 13th. As analyzed by the Technology Policy Group, "Maryland's performance on both the Digital States Survey and the PPI New Economy Index make it clear that the state is weak in usage and deployment of e-commerce and digital tools in its education system and in certain industry sectors." The Technology Policy Group found that States that do well in such rankings have programs that have advanced beyond planning to implementation with concrete metrics, have consistent leadership with a strong executive level message, and develop strong partnerships with the private sector.

The State of Michigan created the Michigan Broadband Development Authority (MBDA) in March 2002 to stimulate economic development and organizational efficiency by enhancing broadband deployment and utilization. Capitalized at $50 million through the sale of bonds to the Michigan State Housing Development Authority, MBDA invests in major "supply-side" projects designed to encourage last mile solutions in underserved communities.

North Carolina's Rural Internet Access Authority was created in response to a 1999 recommendation from the Rural Prosperity Task Force with the approach of stimulating Internet usage in local communities through grants for awareness, planning and training.

3. <u>Maryland is well endowed with high-speed fiber optics but the more rural parts of the State do not have ready access to high-speed bandwidth.</u>

Using publicly available data from over 40 industry sources, the Technology Policy Group prepared Maryland's first ever map of lit fiber infrastructure in the mid-Atlantic region, which was augmented by data prepared by the Cable Telecommunications Association. (See attached maps.) This data was reviewed by members of the Corporate Steering Committee. The analysis found that there is a huge concentration of network connectivity in the Washington D.C. area, that Baltimore's level of connectivity is competitive with cities of similar size, through Washington and Baltimore there is excellent nationwide connectivity with direct links to every part of the country, and direct

international connectivity to Britain, Germany and Canada, and there are major hubs in Hagerstown, Silver Spring, Largo, Columbia, and one hub in Salisbury.

Accessibility to high-speed Internet service is geographically restricted. Through 2001, no county in Maryland had complete DSL coverage, and the counties in Western and Northern Maryland, the Eastern Shore, and most of Southern Maryland lacked DSL service. Cable modem service was reported as more available, although most of Western Maryland and the Eastern Shore lacked accessibility, and regional meetings reported difficulties in obtaining connections.

4. Levels of computer and Internet usage in households is closely correlated to income and education levels; regardless of income or education levels, most Maryland households use dial-up service. See tab #6.

Computer and Internet usages rises with income – of households with income above $50,000, 87% have computers and 77% use the Internet, while for households under $20,000, 31% have computers and 17% use the Internet. Computer and Internet usage rises with education – of household heads with college degrees, 84% have computers at home and 75% use the Internet; for household heads with high school degrees, 47% have personal computers at home and 32% use the Internet.

Education is a particularly powerful influence on computer usage – holding income constant, computer and Internet usage rises with educational attainment.

Household computer and Internet usage varies among geographical regions, but it is closely correlated to the same variation in income among regions.

Across the State, the primary mode of accessing the Internet is through dial-up service – 84% of the households use dial-up, and only small percentages of households use cable modem, DSL or other methods. The type of access does not significantly vary by income, i.e., wealthier households do not access the Internet via broadband services at higher rates than the overall population.

5. Businesses have embraced high-speed access, and business usage shows less variation among regions than household usage, suggesting that businesses consider high-speed access as a basic cost of operations.

Maryland businesses of all sizes use the new telecommunications tools. Seventy-six percent have computer networks, 89% use the Internet; 32% are connected through T1 lines, 41% through dial up, 11% through DSL. Businesses believe the Internet helps them achieve success: 55% said that the Internet increases production, 32% reported that it increased revenue, and expect to continue to support it. 48% expect IT budgets to increase over the next three years and 23% said that eCommerce will change the way their location operates over the next five years.

Firms tend to use the highest speed bandwidth available, regardless of their location in the State. For example, 25% of firms connected in Western Maryland use T1 lines vs. 32% statewide. The data suggest that many businesses recognize the importance of Internet usage in their basic operations and will pay what is required to obtain service.

6. Citizens and small businesses are often not aware of the availability of services and the use of web-based tools and applications.

Major themes that emerged in the regional meetings in rural areas was the need to identify sufficient "user demand" and the importance of educating businesses and households on the value of high-speed bandwidth. Many customers were unaware of the types of services currently available and lacked sufficient technical knowledge to determine their actual requirements. Discussions with telecom providers revealed that they had products that could meet the needs of local customers, but that the providers did not effectively market these services.

7. *networkMaryland* addresses the needs of public sector entities, not the private sector or economic development organizations.

networkMaryland is a high-speed backbone designed, built, and implemented under the direction of DBM to connect public sector customer's networks. The network is available for use throughout the state by public sector entities including State and local government and public education. There is at least one Point of Presence (PoP) in each Local Access Transport Area (LATA) and through these all public sector entities can access these PoPs at a rate consistent throughout the state. The basic network was officially made operational on October 30, 2002; most customers are State agencies although some counties and educational institutions are beginning to express interest in the network.

There was considerable expectation on the part of local economic development organizations that *networkMaryland* would provide access for the private sector and would have been widely available. This view was expressed in numerous regional meetings; the Tech Council of Maryland's report found that "With the *networkMaryland* initiative, the state has found itself with a network that is still not operational. Most of the fiber is still "dark," very few public buildings have been connected to the network, and the State is trying to figure out how to make it useful, either to governmental, quasi-governmental or private organizations."

However, telecom providers are opposed to *networkMaryland* providing service to private sector customers, and DBM states in its transmittal letter of this report that "federal regulatory issues provide constraints for private sector use of the network."

8. Local communities have taken the lead to develop solutions for lack of access.

In response to the articulated demand for internet access, and the view that such access is essential to creating economically competitive communities, local organizations have

taken the lead to develop practical solutions. These include the creation of active business-community partnerships, additional studies to study "aggregate demand," innovative programs to provide service, and applications to federal and state agencies for program and infrastructure funding. Examples include Allconet in Allegany County, the Tri-County Council for Western Maryland, Garrett County, the Tri-County Council for Southern Maryland, the Tech Council of Maryland and the Tri-County Council for the Lower Eastern and Mid-Shore Regional Council.

9. The provision of high-speed Internet access operates within a rapidly changing technological, regulatory, and business environment.

The Technology Policy Group found that "New technologies in telecommunications over the next 5 years will focus on leveraging the current copper and cable infrastructure…New cable, DSL and wireless technologies, however, have the potential to transform the provision of bandwidth in rural areas." The TPG report assessed DSL, cable, and wireless, (the latter in both unlicensed and licensed spectrums) as well as laser, satellite, and second generation wireless systems including non-line of sight, smart antennas, complex modulation systems, automatically aimed end user antennas, and mesh systems.

The TPG also found that the promise of the Telecommunications Act of 1996 has not been realized – competition does not exist in the telecommunications marketplace across the nation. State public utility commissions have extensively deregulated the industry, although a variety of different types of regulations are still used including conventional rate of return, price cap regulations, price cap with interim rate freeze and rate freeze and non-indexed price caps. The Federal Communications Commission (FCC) is currently debating a broad overhaul of the regulations affecting telephone and media companies, with no consensus emerging.

The marketplace of Internet service providers is complex and rapidly changing. *The Washington Post*'s February 2, 2003 Business section described 42 cable, DSL, satellite, national, and local providers and nine wireless companies. Pricing strategies are complex, and firms may terminate service unexpectedly.

VI. Recommendations

Based upon the results of the two-year *eReadiness Maryland* assessment, the Maryland Technology Development Corporation offers the following recommendations for consideration by the General Assembly, the State Administration, and private and public sector organizations interested in this important issue.

1. The State should create a high-level, on-going task force, under the direction of the Governor's office, to coordinate State activities to facilitate access to broadband. The task force should include DBM, DBED, TEDCO, and other appropriate organizations, including the PSC.

2. The ITB or another formal entity should provide a mechanism for the private sector, higher education, local government, telecom providers, and other interests to provide advice to the State.

3. The task force should develop a comprehensive strategy for the facilitation of broadband deployment and usage within the State and should monitor progress of broadband infrastructure deployment and periodically update *eReadiness Maryland.*

4. State, county and local officials, organizations such as MACO and MML, and right-of-way users should identify and disseminate best practices to create right-of-way policies that are timely, predictable, and technologically neutral.

5. The State and localities should examine permitting, taxes, user fees, etc. to ensure that they are consistent with the State's strategy and impose reasonable and non-discriminatory costs.

6. State and local officials should work with high-speed providers to identify other local barriers to high-speed access and develop action plans.

7. Economic development organizations and high-speed providers should form local "quick response" teams to respond to the communications needs of private sector users.

8. Local governments should provide timely data on industrial, commercial and residential development to communications providers to facilitate forward planning and encourage timely investments in private communications infrastructure.

9. The State, private sector and higher education institutions (including community colleges) should develop outreach, awareness and training programs for small businesses to acquaint them with the technical capabilities and business applications of web-based services and tools.

10. DBED, DHCD and other State agencies and localities should review project criteria to ensure that public economic development programs include incentives to

encourage private investments in broadband, e.g., guarantees for broadband access that encourage initial infrastructure investments by service providers.

11. State investments in local access solutions should be planned in close coordination with *networkMaryland,* and should support projects with demonstrated local commitment, e.g., Allconet.

12. The State task force, in collaboration with the PSC and General Assembly, should review current legislation, regulations, and policies to ensure that the State and Maryland companies continue to be leaders in the use of the Internet. The following issues should be reviewed:

a. The requirement of unlimited liability in procurement contracts to ensure that the State has available the broadest range of providers; and

b. Intellectual property policies to ensure that the State has a balanced policy and vigorously exercises technology licensing opportunities.

13. The State should aggressively seek federal funds to support programs for broadband deployment in underserved areas, and through the Governor's Washington office should monitor federal actions that could affect local companies.

14. The State should work with federal agencies and with research universities to improve the acquisition and management of IT; e.g., initial steps have been taken to conduct joint training between MDOT and NSA.

15. The State CIO should report directly to the Governor; maximum flexibility in hiring and procurement should be provided to enable the CIO to effectively and efficiently oversee the State's IT resources.